OCCASIONAL PAPERS

OF THE

CALIFORNIA ACADEMY OF SCIENCES

No. 27, pp. 7, 2 figures. June 15, 1960

# THE GENERIC ALLOCATION OF *HYPSIGLENA SLEVINI* TANNER (SERPENTES: COLUBRIDAE)

By

**Alan E. Leviton**
*California Academy of Sciences*
*San Francisco 18, California*

and

**Wilmer W. Tanner**
*Brigham Young University*
*Provo, Utah*

In 1921, Joseph R. Slevin obtained a small snake at Puerto Escondido, a few miles south of Loreto, Territorio de Baja California Sur, Mexico. This snake was subsequently described by Tanner (1943: 53-54) as a unique species of *Hypsiglena, H. slevini*. The type specimen is a juvenile male and is in a good state of preservation.

Subsequent to Tanner's description of the new species, Bogert and Oliver (1945: 381) referred the name to the synonymy of *H. ochrorhynchus ( = H. torquata ochrorhyncha)* although they did not examine the type specimen. Tanner (1946: 80-82)[2] later pointed out that criticisms leveled by Bogert and Oliver against recognition of *H. slevini* were not entirely justified (although in the matter of dentition they were!), and he contended that *H. slevini* was a distinctly unique species of *Hypsiglena.*

In January, 1959, the senior author and Mr. Hugh B. Leech of the California Academy of Sciences, Department of Entomology, obtained a very distinctive specimen of *"Hypsiglena"* near a rivulet above the waterfalls

[1]This work was sponsored, in part, by a grant from the Belvedere Scientific Fund.

[2]Tanner's paper, though dated December 29, 1944, did not appear until September, 1946.

in the El Saltito Arroyo, 12 miles east of La Paz, Baja California Sur, Mexico, which on comparison with the type of *H. slevini* proved to be assignable to that nominal species. The diagnostic characters distinguishing *"slevini"* from other species of the genus *Hypsiglena* to which it has been assigned, *i.e.*, 23 longitudinal rows of scales at midbody, parietal in contact with both postoculars, absence of a well-defined dark nuchal bar (although two nuchal blotches are present), rostral much broader than deep, large eye, and a greater number of maxillary teeth (contrary to Tanner, 1943, p. 54 and 1946, p. 81), are in evidence in this second and larger female specimen.

The presence of one apical pit per scale and the absence of grooves on the enlarged posterior maxillary teeth relate *"slevini"* to the genus *Hypsiglena,* but general physiognomy, greater number of maxillary teeth, large eye, and the structure of the hemipenes suggest similarities to species of *Leptodeira.* Tanner already expressed similar conclusions in 1946.

The differences separating *"slevini"* from species of *Hypsiglena* clearly indicate it is not closely related to any of the other included species. Indeed, because of its intermediate morphological position between species of *Hypsiglena* and *Leptodeira* and its present limited distribution, we have been led to conclude that this species is in fact a relict of an early ancestral population from which the recent genera *Leptodeira* and *Hypsiglena* were subsequently derived. That *Leptodeira* and *Hypsiglena* are closely related and probably were derived from a common ancestor is not a new concept and the matter has been discussed by Dunn (1936, p. 689), Taylor (1939, p. 315) and most recently by Duellman (1958a, p. 126). In this latest study Duellman not only proposed a common ancestor for the two genera but also described the probable appearance of the early progenitor. This last point is of singular interest because of the fact that Duellman's characterization of the ancestral stock of *Leptodeira* and *Hypsiglena* is essentially a description of the existing populations. of *H. slevini.*

In our attempt to relate *"slevini"* to known leptodeiroid snakes we have had to conclude that it is not closely related to any living species of *Hypsiglena* nor to existing species of *Leptodeira.* Although we believe that the species joins together two phyletic lineages, the absence of intermediates between *"slevini"* and existing species of either genus necessitates that it be assigned to a separate taxon. For this we herein propose that *H. slevini* be made the monotype of a new genus for which we provide the name:

## **Eridiphas** Leviton and Tanner, new genus

*Hypsiglena* (part) Tanner, 1943, p. 53. Bogert and Oliver, 1945, p. 381. Tanner, 1946, p. 80. Smith and Taylor, 1945, p. 72.

TYPE SPECIES. *Hypsiglena slevini* Tanner.

DIAGNOSIS. Maxillary teeth 14, the posteriormost two enlarged and fang-like, but not grooved; head distinct from neck, with normal scutellation and with rostral twice as broad as deep; eye large, its diameter greater than the distance from orbit to nostril, pupil vertically elliptic; scales smooth, in 23 longitudinal rows at midbody, one apical pit present on each scale; anal plate divided; subcaudals paired; hypapophyses absent from posterior dorsal vertebrae; hemipenes unforked, sulcus spermaticus unforked, small patch of enlarged spines present near distal end followed by a capitulum of calyces.

REMARKS. We have already indicated above that *Eridiphas slevini* is intermediate between *Hypsiglena* and *Leptodeira* and probably represents a relict of an early ancestral stock from which these genera subsequently diverged. Thus, *E. slevini* must have been an early invader of Peninsula Baja California, certainly earlier than the existing species of *Hypsiglena* which is found there too. If we can accept Duellman's analysis (1958a) of the evolution of the genus *Leptodeira* then *Leptodeira* and *Hypsiglena* probably diverged from a common ancestor sometime in the late Oligocene or early Miocene, concomitant with the diversification of environmental conditions resulting from the onset of climatic changes. Consequently, the ancestors of *E. slevini* probably entered Baja California from the mainland at that time inasmuch as the two land masses are believed to have been joined by a transgulfian, subaerial land mass before the formation of the Gulf of California in late Miocene or early Pliocene (see Anderson, 1950, p. 48). As a result of the formation of the Gulf, the ancestral population of E. *slevini* must have been isolated on the Peninsula where it has survived to the present day; on the other hand the portion of the population remaining on the mainland, unable to compete with newly evolving descendent species, became extinct.

## ACKNOWLEDGEMENTS

In the course of preparing these notes we found it desirable to examine specimens of several species of *Leptodeira* and *Hypsiglena.* Although samples of most species were available to us, we are indebted to Dr. Norman Hartweg, Museum of Zoology, University of Michigan, for the loan of two specimens of *Leptodeira punctata.* We are also indebted to Mr. James C. Battersby, British Museum (Natural History), for the loan of a specimen of *Leptodeira* ( = *Tantalophis*[3]) *discolor* (Günther).

[3]The description of *L. discolor* Günther led us to suspect possible generic affinities with *E. slevini.* Subsequent study has revealed that the two are very distinct. Recently Duellman (1958b) demonstrated that Günther's species was not related to the leptodeiroid snakes but rather to the xenodontine snakes; he proposed the nominal genus *Tantalophis* to accommodate the form. Our examination of one of Günther's syntypes confirms Duellman's conclusions.

TABLE 1

Summary of counts and measurements (in mm.) of *Eridiphas slevini* (Tanner)

| | CAS 53631 | CAS 86093 |
|---|---|---|
| Sex | Male | Female |
| Ventrals | 188 | 184 |
| Subcaudals | 67 | 55 |
| Dorsal scales (midbody) | 23 | 23 |
| Upper labials | 8 | 8 |
| Lower labials | 10 | 10 |
| Nasal | ÷ | ÷ |
| Loreal | 1 | 1 |
| Preoculars | 2 | 2 |
| Postoculars | 2 | 2 |
| Temporals | 1+2 | 1+2 |
| Dorsal blotches | 51 | 52 |
| Maxillary teeth | 14 | 14 |
| Standard length (snout-vent) | 173 | 354 |
| Tail length | 40 | 70 |
| Head length | 11.6 | 19.7 |
| Snout length | 3.0 | 4.7 |
| Diameter of eye | 2.2 | 3.2 |
| Tail length/Total length | 18.7% | 16.5% |

## BIBLIOGRAPHY

ANDERSON, CHARLES A.

1950. 1940 E. W. Scripps Cruise to the Gulf of California. Part 1. Geology of islands and neighboring land areas. *The Geological Society of America,* Memoir 43, vii + 53 pp., 3 pls.

BOGERT, CHARLES M., and JAMES A. OLIVER

1945. A preliminary analysis of the herpetofauna of Sonora. *Bulletin of the American Museum of Natural History,* vol. 83, pp. 301-425, pls. 30-37.

DUELLMAN, WILLIAM E.

1958a. A monographic study of the colubrid snake genus Leptodeira. *Bulletin of the American Museum of Natural History,* vol. 144, pp. 1-152, pls. 1-31.

1958b. Systematic status of the colubrid snake Leptodeira discolor Günther. *University of Kansas Publications, Museum of Natural History,* vol. 11, pp. 1-9.

DUNN, EMMETT R.

1936. Notes on North American Leptodeira. *Proceedings of the National Academy of Sciences,* vol. 22, pp. 689-698.

TANNER, WILMER W.

1943. Two new species of Hypsiglena from western North America. *Great Basin Naturalist,* vol. 4, pp. 49-54.

1946. A taxonomic study of the genus Hypsiglena. *Great Basin Naturalist,* vol. 5, pp. 25-92, pls. 1-3, map.

TAYLOR, EDWARD H.

1939. Notes on the Mexican snakes of the genus Leptodeira with a proposal of a new snake genus, Pseudoleptodeira. *University of Kansas Science Bulletin,* vol. 25, pp. 315-355, 5 pls.

Figure 1. Lateral view of head of *Eridiphas slevini* (CAS 86093).

Figure 2. Dorsal view of anterior part of body showing color pattern of *Eridiphas slevini* (CAS 86093).